CBCS NEWS

A quarterly newsletter of the Centre for Biodiversity and Conservation Science Issue 8 Summer 2021

The Allen Coral Atlas



CREATE CHANGE

About CBCS

The Centre for Biodiversity and Conservation Science (CBCS) is a world-leading solution-oriented research centre for biodiversity conservation.

Based at The University of Queensland (UQ) in Brisbane, Australia, CBCS works in partnership with scientists, governments, nongovernmental organisations and industry to help solve the most important conservation problems around the world.

cbcs.centre.uq.edu.au



(Main picture) Professor Stuart Phinn and Dr Chris Roelfsema from the Remote Sensing Research Centre reviewing a satellite image of Heron during the 13th annual survey campaign at Heron Reef in 2015. *Photo*: Dr Megan Saunders

(Inset) Satellite image of the French Polynesian islands Taha'a and Raiatea, overlaid with the Allen Coral Atlas's geomorphic (left side) and benthic habitat (right side) maps. Colours represent different classifications. You can explore these two islands and the maps in more detail via this <u>Atlas</u>.

The first detailed global coral reef habitat map and monitoring system

The <u>Allen Coral Atlas</u>, which officially launched this spring, will revolutionise reef management.

Led by CBCS's <u>Dr Chris Roelfsema</u>, the team at UQ's <u>Remote Sensing Research</u> <u>Centre</u> (UQ-RSRC) have digitally mapped geomorphic and benthic habitat in 253,000 km² of the world's shallow coral reefs as the mapping part of the Atlas.

This followed the launch in May 2021 of the Atlas's coral monitoring tool, the world's first satellite-based global coral reef monitoring system for coral bleaching and turbidity. The beta version of the bleaching detection system identifies the brightening of corals by analysing satellite imagery which coincide with a bleaching warning from the National Oceanic and Atmospheric Administration Coral Reef Watch. These data are now vital, with modelling predicting that 70 to 90% of the world's coral reefs will be lost by 2050 due to ocean warming, pollution and acidification.

From the GBR to the world

Initiated in 2017, the Allen Coral Atlas team set out to build a freely available tool that could enhance and support reef science, conservation, management and policymaking. The initiative is an international collaboration between experts in the fields of reef science and earth observation to create a comprehensive global habitat map and monitoring system for coral reefs. The Atlas is named after the late Paul Allen of <u>Vulcan</u>, who conceived and founded it, together with partners <u>Planet</u>, Arizona State University's <u>Center for Global</u> <u>Discovery and Conservation Science</u> (who manage the Atlas), the UQ-RSRC and the <u>National Geographic Society</u>.

As part of the partnership, Dr Chris Roelfsema led the UQ-RSRC team that developed and implemented the habitat mapping process which defines the geomorphic zonation and benthic cover for all shallow-water tropical coral reefs visible from space. The methods of the Atlas are based on original work by Chris and his team for mapping the Great Barrier Reef. These methods are based on combining over two million satellite images from Planet Dove and Sentinel 2 sensors and reference data in machine-learning classifier and object-based clean-up protocols.

The UQ-RSRC mapping team reached out to over 900 scientists and organisations from around the world, with over 400 teams generously sharing almost 500 of their own datasets to support our mapping efforts.



Dr Chris Roelfsema *Photo:* Djoy Roelfsema. Chris with the Coral Reef Habitat Mapping team of the Remote Sensing Research Centre during the twentieth annual survey campaign at Heron Reef in 2020. *Photo:* Chris Roelfsema

Maps connecting people to help save reefs

I did my first dive in a lake in Holland in 1981, not knowing that 40 years later I would lead a team that mapped the world's coral reefs. My first 400 or 500 dives were in lakes with an average 3m visibility and water temperatures between 2 and 18°C, with an average of 9°C. If I

was lucky, I saw two fish. As a teenager I wanted to study marine biology and follow my hero Jacques Cousteau, but instead I ended up learning how to map the shape of the sea

bottom as a hydrographer. As such, I was getting experience on dredging projects in Scotland and oil rigs in the North Sea, very far from coral reefs – and not ideal for my active social life.

So, I changed tack and studied geodetic engineering, gaining my first exposure to remote sensing and to Geographical Information Systems (GIS), as for my thesis research I mapped glaciers in Greenland in 1993. During my studies, I kept on diving and even got paid to teach diving – in muddy lakes. In 1988, I saw my first coral reef, in the Red Sea. Many more would follow. After programming in GIS in an office without windows for two years my partner and I quit our jobs in 1995, and became full-time dive instructors, first in Jamaica and then in Malaysia. At the end of our instructor stint, in 1998, on our way back to Holland, we did the backpacker thing, flew to Australia, bought a car in Brisbane and drove to Cairns. We made a short visit to lan Tibbitts at The University of Queensland, who introduced us to Bill Dennison, and two days later we were counting seagrass

It all started in muddy lakes in Holland.

shoots on the bottom of the eastern banks in Moreton Bay. That field trip in January 1998 resulted in part-time work as a GIS/remote sensing/boating/ diving person with Marine

Botany at UQ. It also led to a postgraduate diploma, which included my first field trip to Heron Island and working with Stuart Phinn on mapping seagrass in Moreton Bay and coral at Heron Island.

From 1999, I started working at UQ, initially with Marine Botany at the Centre for Marine Studies, then from 2000 with the Biophysical Remote Sensing Group, which is now the Remote Sensing Research Centre and part of the School of Earth and Environmental Sciences. I specialised in developing field and/or remote sensing methods to map and monitor coral reef and seagrass environments throughout the world, finishing my PhD in 2010. I soon realised that working with citizen science is a great opportunity to teach people about the marine environment, give them skills, get data and make a difference through projects with the <u>University</u> <u>Underwater Club</u>, <u>CoralWatch</u>, <u>Reef Check</u> and <u>Great Reef Census</u>.

Fortunate I am to collaborate with so many scientists, conservationists, managers, teachers, field experts, volunteers, photographers, ecologists, coders, statisticians, fish biologists, planners, law makers, etc, etc – from all around the world. In most of these collaborations, developing maps or monitoring approaches of the marine environment is necessary to provide valuable spatial information that helps us to understand, protect and conserve coral reefs and seagrass habitats.

Success in developing large-scale reef mapping methods led to funding in 2018 to map for the first time the benthic habitats of each shallow reef of the Great Barrier Reef. That led in turn to mapping the world's coral reefs through the Allen Coral Atlas. And that is pretty cool. Providing free data to support conservation of these valuable coral reef and seagrass environments is key. It requires citizen scientists, research scientists and managers to work together help make the community aware of what they can do to help these habitats that we depend on.

(continued from previous page)

A tool for saving coral reefs

This innovative platform of the Allen Coral Atlas provides a unique opportunity for anyone, anywhere to make global comparisons between reefs, while also giving free access to download highresolution habitat maps for reef features that have never before been mapped. The Allen Coral Atlas has already had an enormous positive impact on reef conservation around the world, helping researchers, conservationists and decisionmakers achieve their goals. These have included proposing new marine protected areas, informing disaster risk assessments and prioritising reef restoration.

Visit the <u>Allen Coral Atlas</u>. Watch the <u>video</u>. Read the <u>UQ News piece</u>. Read the <u>media release from the Minister for the</u> <u>Environment</u>.

References

Kennedy, E. V., Roelfsema, C. M., Lyons, M. B., Kovacs, E. M., Borrego-Acevedo, R., Roe, M., Phinn, S. R., Larsen, K., Murray, N. J., Yuwono, D., Wolff, J., & Tudman, P. (2021). Reef Cover, a coral reef classification for global habitat mapping from remote sensing. *Scientific Data*, 8(1), 196. <u>doi.org/10.1038/s41597-021-00958-z</u> Li, J., Knapp, D. E., Lyons, M., Roelfsema, C., Phinn, S., Schill, S. R., & Asner, G. P. (2021). Automated Global Shallow Water

Li, J., Niapp, D. E., Lyons, M., Koenserna, C., Phinn, S., Schill, S. R., & Asner, G. P. (2021). Automated Global Shallow Water Bathymetry Mapping Using Google Earth Engine. *Remote Sensing*, *13*(8), 1469. <u>mdpi.com/2072-4292/13/8/1469</u> Lyons, M. B., Roelfsema, C. M., Kennedy, E. V., Kovacs, E. M., Borrego-Acevedo, R., Markey, K., Roe, M., Yuwono, D. M., Harris, D. L., Phinn, S. R., Asner, G. P., Li, J., Knapp, D. E., Fabina, N. S., Larsen, K., Traganos, D., & Murray, N. J. (2020). Mapping the world's coral reefs using a global multiscale earth observation framework. *Remote Sensing in Ecology and Conservation*, 6(4), 557-568. doi.org/10.1002/rse2.157

Roelfsema, C., Borrego-Acevedo, R., Canto, R., Harris, D., Kennedy, E., Kovacs, E., et al. (2021a). Benthic and Geomorphic Reference Data for Global Coral Reef Mapping, figshare. Collection. <u>doi.org/10.6084/m9.figshare.c.5233847.v4</u>

Roelfsema, C. M., Lyons, M., Murray, N., Kovacs, E. M., Kennedy, E., Markey, K., Borrego-Acevedo, R., Ordoñez Alvarez, A., Say, C., Tudman, P., Roe, M., Wolff, J., Traganos, D., Asner, G. P., Bambic, B., Free, B., Fox, H. E., Lieb, Z., & Phinn, S. R. (2021b). Workflow for the Generation of Expert-Derived Training and Validation Data: A View to Global Scale Habitat Mapping [Methods]. *Frontiers in Marine Science*, 8(228). doi.org/10.3389/fmars.2021.643381



Scicomms with a twist: Alice Twomey takes home joint Fresh Science 2021 award

CBCS postdoctoral research fellow Dr Alice Twomey shared the Fresh Science 2021 People's Choice Award on Wednesday 20 October jointly with Csilla Demeter of the UQ Business School. She took home her award after presenting her research to both an audience of 80 members of the public and a panel of six academic judges, including Queensland's Chief Scientist, Professor Hugh Possingham. Martina Barzan from Griffith University won the Judges' Choice Award.

This Science in the Pub event asked 11 Fresh Science 2021 finalists from eight Queensland higher education institutes to present their research in just 60 seconds, in a highly competitive and very watchable science communications skill-building exercise. It came with a last-minute twist, however. After refining their talks over two full-day E-connect workshops, on the night, each scientist was given a word from their talk that they were not to use.

In Day 1 of these workshops, the researchers had presented their work in mock television and radio interviews with news reporters from Channel 10, *The Courier-Mail*, and Scope. In Day 2, they pitched to panels to enhance their abilities in applying for grants, and asking for support or facilities for their research.

Alice presented research that was part of her PhD, "From grey to green: seagrass instead of seawalls to keep our shorelines where they are". Her talk was a 60-second summation of 10 months of research that produced the article "Lateral sediment erosion with and without the non-dense root-mat forming seagrass *Enhalus acoroides*". Her banned word was "*Enhalus*", which certainly presented her with a challenge, but one she rose to with alacrity.

The event was a great success and a fantastic opportunity for the researchers to develop their science communication skills.

Keep your eyes peeled for the 2022 round of applications, and get involved with Fresh Science next year.



Soapbox Science Brisbane 2021

Soapbox Science, coordinated by CBCSer **Dr Nathalie Butt**, former CBCSer Dr Alienor Chauvenet (now at Griffith University) and Dr Kate Seib (Griffith University) finally took place on Saturday 23 October, in the Queensland Museum precinct at the aptly named Sisters Green. It had been cancelled in August 2020 and again in August 2021 due to COVID-19 lockdowns or restrictions. But this just made it so much the sweeter for it to go ahead at last.



Speakers were drawn from The University of Queensland, Griffith University, CSIRO, Queensland University of Technology and the Queensland Museum. The topics ranged from using decision science in conservation to urban ecology, marine species, cancer detection, the trade in endangered species, edible insects, antibiotic resistance, mathematical applications and the impacts of introduced species on native wildlife. The star of the show was Netflix the pet python, and I can report that mealworms taste nicer than crickets!

The forecast storm stayed away, and the trees provided plenty of shade for the speakers, volunteers and audience alike. Thanks go out to the 15 volunteers (including several CBCSers) who gave up their Saturday to help out and did a great job; and staff from the Queensland Museum who helped us to get set up. Around 230 people came along to listen to the speakers during the three hours of the event.





The Moreton Bay Foundation's Day on the Bay

Bright and early on Saturday 23 October, a group of CBCS researchers set off for a unique opportunity to attend The Moreton Bay Foundation's annual "Day on the Bay".

The event brought together researchers and almost 200 of the foundation's supporters to talk about and celebrate the things that make Moreton Bay such a special place.

Talking research

Starting with coffees at the William Gunn Jetty (next to Manly Marina) and a look around the Moreton Bay Discovery Centre's excellent displays, we boarded two Moreton Bay cruisers (timber day cruising boats built in the 1960s) for a lovely crossing to Dunwich on Minjerribah/North Stradbroke Island. This gave us a great opportunity to mingle with the other guests and talk about the research we are doing on the Bay.

On arrival, guests were invited to tour The University of Queensland's (UQ's)

Moreton Bay Research Station, with Ian Tibbetts providing a fascinating and entertaining insight into the history of the station and the impressive facilities available to researchers worldwide.

The event then moved on

to the Little Ships Club on the foreshore at Dunwich, where Quandamooka man Joshua Walker opened the gathering with a Welcome to Country. The CBCS researchers were introduced to the guests, who were encouraged to chat with us throughout the day. Associate Professor Carissa Klein was invited to the stage to talk about CBCS and UQ's Sustainable Urban Seascapes (Moreton Bay) project that was funded by UQ Strategic Funding.

Josh captivates the crowd

CBCS PhD candidate Josh Wilson had previously been awarded funds by the Foundation for his research on developing software to identify shorebird species in images, and testing drones for monitoring shorebirds.

"An amazing opportunity for new research students to learn about UQ's work on Stradbroke Island"

Annalise Re. CBCS MPhil student

are those who can communicate their research with passion and inspire others to act on the outcomes of their work. Day on the Bay provided researchers at UQ with

reflected on the day,

saying "Some of the most

influential conservationists

Josh gave a passionate and captivating

talk to the crowd about this research,

demonstrating what an accomplished

science communicator he is. Josh later

an opportunity to practise these skills, communicating our projects to people who are looking to invest in the conservation of Moreton Bay. I left the event feeling excited and motivated by the passion I saw from people who appreciated the value of the research we are doing here at CBCS." The guests also heard about another research project underway on oyster reef restoration.

The foundation officially launched their Ambassador Program, which facilitates ambassadors to spend time in Moreton Bay with researchers, volunteers and local legends, and see some of the projects such as oyster reef restoration, seagrass and coral surveys, whale research and shorebird monitoring. The contributions the ambassadors

An eastern curlew coming in to land. With population declines of over 80% in the past 30 years, this endangered species was a big talking point at The Moreton Bay Foundation's Day on the Bay 2021. Artist: Joshua Wilson

(Below) Day on the Bay lunch on the lawns of the Little Ships Club, Dunwich, Minjerribah/ North Stradbroke Island. Photo: Carissa Klein



provide to this program support research projects by the foundation's member organisations (UQ, Queensland University of Technology, Griffith University, University of the Sunshine Coast and Quandamooka Yoolooburrabee Aboriginal Corporation).

Highlights of the day

Locally caught, sustainable seafood was the star of the long lunch menu. Local Brisbane chef Richard Webb designed the menu with a focus on Moreton Bay seafood from local suppliers. Needless to say, it was a delicious treat for seafood lovers (and the vegetarian/ vegan options looked equally divine).

Other CBCS members reported that the highlights of the day included displays at the Discovery Centre, the cruise over to the island, and chatting with people on the boat. Joshua's Welcome to Country was fascinating, as was Josh Wilson's overview on migratory birds and how development affects them. One CBCSer was particularly impressed by the keen interest exhibited by the guests in, and their enthusiasm for, local biodiversity and conservation issues. Their generous support through the sponsorship of the shorebirds banding program reflected a genuine commitment to learning and supporting research. Overall, it was heart-warming to see so much enthusiasm and appreciation for the Bay.

NEWS IN BRIEF

Making the most of scarce funds: evaluating the benefits of actions for the Endangered southern black-throated finch

CBCS Masters student Emma Fitzsimmons is investigating the cost-effectiveness of conservation actions for the Endangered southern black-throated finch (*Poephila cincta cincta*). Using a tool developed by fellow CBCSers <u>Dr Tracy Rout</u> and <u>Associate Professor Eve McDonald-Madden</u>, and supervised by <u>Dr April Reside</u>, Emma is comparing the benefit of captive breeding to on-ground conservation actions.

Emma conducted a workshop in late October in Townsville to gather information from the people most closely involved in blackthroated finch research and conservation, which included the Black-throated Finch Recovery Team and independent experts. The experts were drawn from natural resource management groups, ecological consultants, CSIRO, Townsville City Council, Birdlife Australia, Birdlife Townsville, finch breeders' associations and The University of Queensland and Macquarie University.

The findings from the workshop will feed directly into the National Recovery Plan for the Black-throated Finch, which is currently being updated and will guide Queensland and national planning.

(Below) Endangered southern black-throated finches. *Photo:* Emma Fitzsimmons

(Bottom) Masters student Emma Fitzsimmons running the workshop on cost-effectiveness of conservation actions for the black-throated finch. *Photo:* Ted Bragg







The walllum sedgefrog Litoria olongburensis. Photo: Alannah Filer

Acoustic competition in sedgefrogs

A recent analysis of the calling behaviour of the Australian eastern sedgefrog and the Endangered wallum sedgefrog led by CBCS PhD candidate <u>Alannah Filer</u> identified new evidence of acoustic competition between the two species when found in the same habitat. While competition between the species had previously been hypothesised, a mechanism was yet to be identified. However, in this study, rhythm analyses of the species in solo and shared habitats evidenced significant increases in the call rates of both species when sharing the acoustic space, indicating potential acoustic competition. Read the paper <u>here</u>.

WiT Dinner 21 October 2021

The 2021 Women in Technology Awards Presentation and Gala Dinner, held on Thursday 21 October, was an evening to remember. The dinner hosted 840 members and guests who came together to celebrate the achievements and contributions of women and champions of change in Queensland's STEMM industries. CBCS and UQ sponsored five women to attend the evening, to celebrate the many women who are doing amazing work and to support networking opportunities.

CBCSer <u>Dr Michelle Ward</u> was a finalist in her category, Emerging Achiever in Science. *Photo:* Phoebe Stewart-Sinclair



NEWS IN BRIEF

Eucalyptus walk at Toohey Forest 7 November 2021

It was great to see more than 30 people (and several nextgeneration botanists) come along to learn about the eucalypt species on our doorstep. <u>Associate Professor Rod Fensham</u> showed us how to use his new book, the fabulous guide he put together during lockdown. The *ACE Guide to Eucalypts Brisbane* (A for Angophora, C for Corymbia, E for Eucalyptus – the three genera that currently make up the broader group of eucalypts) would make an excellent Christmas present for the botanist in your family. One innovative feature is that the photos of leaves, gumnuts and flowers are all actual size, allowing for easy matching when trying to identify a species. Contact Rod for your \$20 copy.

Rod Fensham's new guide in action on the Toohey Forest walk – plus a *Eucalyptus propinqua* leaf. Rod shows us how to use leaf colouration and gumnut shape as species' identifiers. *Photos:* Nathalie Butt





A noisy miner group trident. Photo: Paul McDonald

Noisy miners: identifying factors of removal success

CBCS PhD Candidate <u>Courtney Melton</u> has recently led a paper evaluating the effectiveness of lethal control of a problematic Australian species, the noisy miner. Very different results had been reported for different noisy miner removal events, so Courtney and team searched for correlates of success. Surprisingly, they found that even though most removals failed to reduce noisy miners to low numbers, even these "unsuccessful" removals benefited other woodland birds. However, identifying an approach that works remains elusive – only sustained effort via continuous culls over time appeared to increase the chance of successful removals. Read the paper here and *The Conversation* article here.

CBCS's Dr Helen Mayfield and the COVID-19 Risk Calculator

Dr Helen Mayfield together with UQ's Professor Colleen Lau and QUT's Professor Kerrie Mengersen developed the modelling framework behind the risk calculations for the Immunisation Coalition COVID-19 Risk Calculator (CoRiCal), whose release attracted nationwide media interest in October. CoRiCal is an online tool designed to support GPs and community members in making informed decisions around vaccination, based on their current circumstances and under different transmission scenarios. The tool's co-lead researchers are UQ's Dr Kirsty Short, Flinders University's Associate Professor John Litt and GP Dr Andrew Baird. CoRiCal is adaptable for booster doses, new viral strains, younger age groups, and can be adapted for use in other countries, and even for other infectious diseases. Investigate the tool here, and read the papers here and here, and ABC News media coverage here.

NEWS IN BRIEF



Alex Bond showing us some of the traditionally used plants found at UQ. *Photo:* Nathalie Butt

Strategies for Developing Resilience to Ecological Grief workshop

Working on the premise that "one of the penalties of an ecological education is that one lives alone in a world of wounds" (Aldo Leopold), key takeaways from this CBCS Small Grants Scheme workshop held on 22 October were that ecological, or environmental, grief is not fixable, so that we need to find techniques for living with it and not becoming paralysed.

Participants learned about various methods and approaches to coping with ecological grief, and about how our brains work and have evolved to experience various emotions, specifically grief, as a processing mechanism. Unlike other grief scenarios, with ecological grief peer support is probably more important, as family and friends may not understand what we are going through as they lack the research context.

Following the workshop, local Aboriginal scholar and leader Alex Bond took us on a fascinating history lesson and bush tucker tour around UQ. Who knew black wattle was such a useful plant!

Tapping into non-English-language science for conservation



In a *PLOS Biology* article, CBCS Chief Investigator <u>Dr Tatsuya</u> <u>Amano</u> and Senior Research Technician <u>Violeta Berdejo-</u> <u>Espinola</u> led a team of 61 collaborators from around the world to investigate the role of non-English-language studies in facilitating evidence-based

conservation. By screening 419,679 papers in 16 languages, the team identified 1,234 non-English-language studies providing evidence on the effectiveness of conservation interventions, especially in areas and for species where English-language evidence is scarce. Read the paper <u>here</u> (summary available in 16 languages – see Supporting information).

CBCS Binna Burra hike 10 October 2021

CBCSers enjoyed a fantastic day out hiking Dave's Creek circuit at Binna Burra, Lamington National Park for the inaugural CBCS social hike. The weather was beautiful and we walked 12km through subtropical rainforest, *Allocasuarina* forest and flowering montane heath to amazing views over Numinbah Valley. Some even did the extra 3km up to the Antarctic Beech forest. It was reassuring to see the *Allocasuarina* forest regenerating post-fire (although sadly no glossy black-cockatoos were sighted) and refreshing to stop for a break in the cool caves on the walk back.



CBCSers taking a break in the shade, Lamington National Park. *Photo:* Valerie Hagger

World Seabird Conference

In October 2021, the third World Seabird Conference ran as a highly successful virtual event. In total, eight workshops and 575 presentations were given, with all content available online for one year. Symposia covered a broad spectrum of cutting-edge seabird science around emerging threats like marine plastics, anthropogenic light at sea and extreme weather events, through to solutions such as decision support tools for planning species translocations to large-scale marine protected areas informed by tracking studies. Poster sessions allowed researchers to connect across the world via webcam. The conference showcased the global importance of Australia for seabirds and seabird science. Visit the conference website <u>here</u>.

Several Australian seabird science projects were presented during the conference including CBCS-led, NESP-supported research into the recovery of threatened seabirds like blue petrels on Macquarie Island. *Photo:* Jez Bird



Restoring coastal wetlands

I grew up in Brisbane and have witnessed a lot of changes since it was considered a big country town. My family moved from Switzerland, so we were always exploring the national parks and beaches, and spending holidays at Noosa. I have always been fascinated with animals and I love camping and bushwalking in nature.

I studied Environmental Science at The University of Queensland (UQ) back when it was run by the three Davids (Doley, Lamb and Yates), majored in ecology, and have never looked back. My Honours was on the wallum froglet, a tiny frog specialised to acidic coastal heathlands, with Susanne Schmidt, who continued to be a mentor to me, later co-supervising my Masters on the climate change vulnerability of subtropical rainforest fauna with Diana Fisher.

London then Brisbane calling

I lived in London for a while, managing Environmental Impact Assessment projects for iconic office and residential towers, learning much about planning and sustainability. But I missed the wildlife in Australia and was soon back in Brisbane with my English musician husband, working as a terrestrial ecologist. I have spent years around Queensland surveying flora and fauna and searching for threatened species from the crack of dawn until midnight, by 4WD, foot and canoe. Some highlights are finding ornamental snakes, black-breasted button-guails and boggomoss snails, and harp trapping microbats. But I was jaded by the impacts of large infrastructure and mining projects and writing revegetation

plans where very little was known about success. So I decided to do a PhD (with UQ and CSIRO) on improving the success of ecological restoration and enhancing outcomes for biodiversity conservation and carbon sequestration, guided by wonderful supervisors, Kerrie Wilson, John Dwyer and Jacqui England. It was challenging doing a PhD with young children, but in the end, it was my kids who pulled me through – and ballet. It has been so important to have a creative outlet that's just about me.

Best of both worlds

Now I am a postdoctoral research fellow working on coastal wetland conservation and restoration with the Lovelock Lab in UQ's School of Biological Sciences. I find coastal wetlands so interesting because they are complex environments influenced by land and sea, providing habitat for both terrestrial and marine fauna (best of both worlds). I have been working on an ARC linkage research project with Megan Saunders, Catherine Lovelock and partners at The Nature Conservancy and Healthy Land and Water to identify socioeconomic and biophysical factors that enable effective conservation and restoration of mangroves globally and in south-east Queensland. I have learnt so much over the past two years about tropical coastal and marine ecosystems.

A highlight of my postdoc has been the opportunity to work with international experts co-authoring guidelines for countries to incorporate coastal wetlands into their national greenhouse gas inventories for the Australian Government P R O F I L E Dr Valerie Hagger CBCS ECR Representative -Community



(Above) Hiking in the beautiful Swiss Alps on my most recent overseas holiday. (Left) My happy place – bird surveying in restoration sites. *Photos:* D. Hagger

International Blue Carbon Partnership, which was launched at COP26 in Glasgow. I am also leading a National Environmental Science Program research project on developing a framework to select coastal wetland restoration sites for blue carbon in different regions of Australia that considers biophysical suitability, economic feasibility, wetland values and benefits to Traditional Owners.

Restoration

I value volunteering to improve restoration practice and advocacy, and for connecting with people who share the same passion. I'm on the board of the Society for Ecological Restoration Australasia, and a representative on the Restoration Decade Alliance, a consortium of Australia's NGOs involved in large-scale restoration, working together to achieve the goals of the UN Decade of Ecosystem Restoration in Australia. This keeps me grounded in the needs of practitioners and the power of collection action. I am excited to be a restoration ecologist in the beginning of the UN Decade, where we have an opportunity now and in the coming years to recover our degraded ecosystems.

Centre for Biodiversity and Conservation Science

Director: Dr Daniel Dunn daniel.dunn@uq.edu.au

CBCS News Editor: Kate Donnelly

E cbcs-info@uq.edu.au T +617 344 60879 W cbcs.centre.uq.edu.au

CRICOS Provider 00025B